

ABSTRACT OF THE DISCLOSURE

A simply structured, and highly reliable semiconductor apparatus having a large storage capacity. The apparatus has a plurality of memory cells on one semiconductor substrate, each including a capacitor having first and second electrodes, and a switching device having a control terminal connected to a corresponding word line among a plurality of word lines, and a current channel connected between the first electrode and a corresponding bit line among a plurality of bit lines. When the semiconductor apparatus is in a first mode, an OFF potential of the word lines is set to be a first potential, when the semiconductor apparatus is in a second mode, an OFF potential of the word lines is set to be a second potential, and a current channel of the switching device is set in a direction vertical to the semiconductor substrate.